

## Mepron® is proven to be the most efficient rumen protected methionine

Patton (2010) investigated the effect of rumen-protected methionine (RPM) on dry matter intake, milk production, true milk protein production, and milk fat yield in lactating dairy cows. Differences in responses between two most widely used RPM products, Mepron® and Smartamine®, were investigated as well.

### Method

By using a meta-analysis, only full studies that had been published in refereed journals were chosen. Feeding studies selected excluded those where amino acids were provided by infusion. Studies that used RPM in combination with rumen-protected lysine or other lysine sources which would not allow testing the effects of RPM alone were rejected as well. Also, dry matter intake, milk production and milk protein production must have been provided. These criteria left a database of 36 studies with 17 studies evaluating Mepron®, 18 evaluating Smartamine® and one study evaluating both products.

### Rumen-protected methionine increased production of true milk protein

Overall, this analysis shows a slight decrease in dry matter intake and a slight increase in milk production when feeding RPM. Both protein percentage (0.07 %) and protein yield (27 g/d) were increased due to RPM addition. Concurrently, milk fat percentage was marginally decreased (-0.01 %), but milk fat production increased by 11 g/d due to the higher milk volume.

### RPM effect was due to Mepron®!

Meta-analysis of product effects on changes in production variables is presented in Table 1. The RPM effect of decreased feed intake and increased milk production described above was due to Mepron®. This resulted in a milk protein response twice as large for Mepron® as for Smartamine® (37 g/d vs. 16 g/d). Milk fat yield was increased for Mepron® supplemented cows, but milk fat changes were almost nonexistent for Smartamine® supplemented cows.

**Table 1**

Response	Adjusted mean effect by product	
	Mepron®	Smartamine®
Dry matter intake (kg)	- 0.10	0.04
Milk (kg)	0.35	- 0.22
True milk protein (%)	0.06	0.08
True milk protein yield (kg)	0.037	0.016
Milk fat (%)	- 0.01	- 0.02
Milk fat yield (kg)	0.024	- 0.002

**Meta-analysis of effect size of production responses when Mepron® or Smartamine® is included in diets of lactating cows**

## Different release properties

Although there are differences in the coating between these products, it is difficult to believe that this small amount of material (0.015 % of dry matter intake) could cause differences of the magnitude detected. Rather, the release properties seem more likely to be the reason for the difference.

If blood values of methionine were indicators of the bioavailability of RPM, and Smartamine® were truly more available than Mepron®, one would expect corresponding differences in the potency of these products to promote true milk protein output. This could not be observed, because Mepron® promoted milk protein synthesis more than Smartamine®.

## Bottom Line

- The largest effect of adding RPM to the diet of lactating cows was a 0.07 % increase in true milk protein percentage and with a resultant 27 g increase of true milk protein yield.
- Milk protein production in Mepron® fed cows responded twice as much as in Smartamine® fed cows.
- This can be explained by the different release properties of the two commercial products.

## Reference

Patton RA (2010): Effect of rumen-protected methionine on feed intake, milk production, true milk protein concentration, and true milk protein yield, and the factors that influence these effects: A meta-analysis. J Dairy Sci 93: 2105-2118

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